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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/551,035

09/27/2005

Yasushi Sano

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EXAMINER

YANG, JIE

ART UNIT

PAPER NUMBER

1793

MAIL DATE

DELIVERY MODE

07/16/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/551,035 | Applicant(s) SANO ET AL. | |
| | Examiner JIE YANG | Art Unit 1793 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) 3-12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 September 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/3/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of "Group I—Claims 1, drawn to a product of an electrodeposited copper foil with low roughness surface" in the reply filed on 5/2/2008 is acknowledged with traverse. The traverse is under the ground of Group I and II is sufficiently related that a thorough search for the subject matter of any one group of claims would encompass a search for the subject matter of the remaining claims. Thus, it is respectfully submitted that the search and examination of the entire application could be made without serious burden. This is not found persuasive because Claim 1, drawn to a product of an electrodeposited copper foil with low roughness surface, however, claim(s) 3-12, drawn to a method for manufacturing an electrodeposited copper foil with low roughness surface. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 (refer to the office action marked 3/3/2008). The Examiner notices the product-- electrodeposited copper foil with low roughness surface as claimed can be made by another materially different process such as: using a lead electrode in stead of titanium plate as recited in the instant independent claim 3 in the electrodeposition process. Therefore, examining group I does not require searching the classes required for examining group II.

The requirement is still deemed proper and is therefore made FINAL.

Claims 3-12 are withdrawn from consideration as being directed to a non-elected group and Claim 1 is pending for examination.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolski (US 5834140, thereafter, US'140).

Regarding claim 1, US'140 teaches an electrodeposited copper foil characterized in that roughening treatment is performed on a matte side of an untreated copper foil wherein the surface roughness R_z of the matte side of the untreated copper foil is the same as or less than the surface roughness R_z of the shiny side of this untreated copper foil (Abstract, claim 1 of US'140) with R_z from 0.6 to 2.1 μm (Table 2 of US'140), which overlaps the surface roughness (R_z) 2.0 μm or less as recited in the instant claim. US'140 teaches the elongation of the copper foil is from 18.6 to 19.5% at 180°C (Table 2 of US'140), which reads on the limitation of a percent elongation 10.0% or higher at 180°C as recited in the instant claim. US' 140 further teaches the copper foil has flatter surface on both surface as compared with the conventional ones (Col.1, lines 7-

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19 of US'140) and the copper crystal can be made fine and a plating surface having less unevenness can be obtained (Col.5, lines 7-17 of US'140), which reads on the limitation of foil having low roughness without uneven surge as recited in the instant claim.

US'140 does not specify characterizing the surface uniformity of the foil with degree of mirror gloss of the roughness surface, measured by Gs (85°) in accordance with JIS (Japanese Industrial Standard) Z8741 is 100 or more. However, US'140 teaches characterizing the foil's uniformity by measuring 10-point mean roughness (R_z) (Col.4, lines 23-32 of US'140) and center-line mean roughness (R_a) (Col.7, lines 7-50 of US'140). Because US'140 teaches the same flat low roughness copper foil with the similar R_z (0.6-2.1 μ m) and percent elongation (10.0% or higher) at 180°C made by the similar electrodeposition process as recited in the instant invention. Therefore, the property that surface uniformity of the foil with degree of mirror gloss of the roughness surface, measured by Gs (85°) in accordance with JIS (Japanese Industrial Standard) Z8741 is 100 or more would inherently be expected in the US'140 foil. The Examiner's position is further supported by following findings, that is, all the foil samples in the instant invention (Table 2 of the

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instant invention), which has both side roughness R_z less than 2.2 and percent elongation 10.0% or higher at 180°C, have the claimed property: surface uniformity of the foil with degree of mirror gloss of the roughness surface, measured by G_s (85°) in accordance with JIS (Japanese Industrial Standard) Z8741 is 100 or more.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884.

The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Supervisory Patent Examiner, Art Unit 1793